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# CATALOG OF ACANTHACEAE IN EL SALVADOR

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ABSTRACT. Sixty-seven species in 31 genera of Acanthaceae are documented from El Salvador. Forty-three of these are native to the country, including the following nine species, which are reported from El Salvador for the first time: *Anisacanthus tetracaulis*, *Chileranthemum pyramidatum*, *Dicliptera membranacea*, *D.* sp., *Dyschoriste hirsutissima*, *Justicia ramosa*, *Ruellia hookeriana*, *R. paniculata*, and *Tetramerium tenuissimum*. Thirty-four (79%) of the native species have been collected in El Salvador since 1960. The catalog of Salvadoran Acanthaceae presented includes the following information for each species: department(s) of occurrence, collections examined, local name(s), and medicinal/economic uses.

## INTRODUCTION

El Salvador is the smallest country in Central America (with an area of about 21,000 square kilometers) and the most densely populated (with about 278 people per square kilometer). The country is considered to be generally deforested (Hampshire 1989) with little natural vegetation remaining (Gentry 1978). Although it has not received much attention from the plant taxonomic community in recent years (Bernhardt & Montalvo 1978), renewed collecting activities and a floristic listing project emanating from the Jardín Botánico La Laguna (Anonymous 1993) are currently underway.

Standley and Calderón (1925) listed 2,070 species of flowering plants from the country and Hampshire (1989) estimated that the total might be near 2,500. Recent collections of Acanthaceae from El Salvador have revealed some interesting range extensions for the country. Because many Acanthaceae thrive in disturbed habitats, it is possible that additional members of the family will be found there. Species not yet recorded from El Salvador, but likely to occur there (or to have occurred there prior to the recent extensive deforestation) based on their overall distributions and habitat preferences, include: *Aphelandra aurantiaca* Lindl., *Carlowrightia arizonica* A. Gray, *Hygrophila costata* Nees, *Justicia candelariae* (Oerst.) Leonard, *J. macrantha* Benth., *J. pectoralis* Jacq., *Lepidagathis alopecuroidea* (Vahl) R. Br. ex Griseb., *Poikilacanthus macranthus* Lindau, *Ruellia jussieuoides* Schltdl. & Cham., *R. matagalpae* Lindau, *R. nudiflora* (Engelm. & A. Gray) Urb., *R. stemonacanthoides* (Oerst.) Hemsl., and *Staurogyne agrestis* Leonard.

The following catalog was compiled in an effort to voucher those species of Acanthaceae known from the country, both currently and historically, and to bring their nomenclature up to date. Standley and Calderón (1925) and, subsequently in a revised second edition, Calderón and Standley (1941) listed 37 species of native and exotic Acanthaceae in El Salvador. Guzmán (1950) listed five species of the family as being of some use to man in El Salvador. Leonard (1927), Standley (1930), Carlson (1948), and Daniel (1983, 1993) cited specimens representing other species found in the country. Gibson (1974) and Daniel (1995a) noted the occurrence of several additional species in El Salvador in their distributions of taxa treated from Guatemala and Chiapas respectively, but they did not cite specific

collections from the country. The most recent listing of Acanthaceae in El Salvador is that of Berendsohn and Araniva (1989) who recognized 53 species in the country (including 16 non-native species). Few of the above-mentioned publications on the flora of El Salvador either documented taxa by citing specimens or provided keys for identification of species. The most useful reference for identifying Acanthaceae in El Salvador is the treatment by Gibson (1974) in the *Flora of Guatemala*.

In this annotated catalog 67 species of Acanthaceae in 31 genera are reported from El Salvador, all of which are documented by collections. Forty-three of these species (see Appendix) are considered to be native to the country and 24 are either cultivated or naturalized exotics. Among the native taxa, one genus (*Chileranthemum* Oerst.) and nine species are herewith reported from El Salvador for the first time: *Anisacanthus tetracaulis*, *Chileranthemum pyramidatum*, *Dicliptera membranacea*, *D.* sp., *Dyschoriste hirsutissima*, *Justicia ramosa*, *Ruellia hookeriana*, *R. paniculata*, and *Tetramerium tenuissimum*. Among the exotic species, *Hypoestes phyllostachya* is newly reported as naturalized in the country. Additional exotic Acanthaceae are undoubtedly cultivated in El Salvador.

The types of eight names were collected in El Salvador: *Aphelandra padillana*, *Henrya reticulata*, *H. longipes*, *Justicia salvadorensis*, *J. soliana*, *Sanchezia sprucei* var. *salvadorensis*, *Tetramerium calderonii*, and *T. standleyi*. All were thought to represent taxa endemic to El Salvador at the time of their description. Studies during the past 25 years have shown that there are no species of Acanthaceae endemic to the country, and several species listed below have undoubtedly been extirpated from it through habitat destruction. Of the 43 species of Acanthaceae treated as native in El Salvador, 34 of them (79%) have been collected in the country since 1960 (Appendix).

Figure 1 shows the major political boundaries (departments) within El Salvador and the number of native species of Acanthaceae known from each. The greatest number of species has been collected in western El Salvador (Ahuachapán, Santa Ana, and Sonsonate). The northern contiguous departments of Cabañas, Chalatenango, and Cuscatlán constitute that portion of the country with the fewest collections of Acanthaceae. The reasons for this geographic discrepancy in the distributions of Salvadoran Acanthaceae are not completely understood. The diversity of ecological life zones in the western departments appears to be no greater than that in the northern departments (Holdridge 1978). Further, the diversity of ecological zones in San Salvador is approximately equivalent to that in Cuscatlán (Holdridge 1978); yet 16 species of Acanthaceae are known from the former department and only one from the latter. It appears that the diversity of ecological life zones alone cannot explain the patterns of species richness observed among the departments of El Salvador. Unfortunately, few collections of Acanthaceae from El Salvador provide information on the type of vegetation or ecological zone in which they were collected. According to W. Berendsohn (pers. comm.), one likely explanation for the greater number of collections of Acanthaceae in western El Salvador is the accessibility of this region, which has resulted in its being more thoroughly collected than the northern portions of the country. Other factors that might influence the distribution of Acanthaceae within the country include: 1) the sole occurrence of dry forest ("bosque seco tropical") in northern Santa Ana; and 2) the presence of extensive natural areas in Ahuachapán, Sonsonate, and Santa Ana contrasted with the lack of (or presence of much smaller) such areas in Chaltenango, Cabañas, and Cuscatlán (Morán et al. 1985). In order to understand distribution patterns of Acanthaceae within El Salvador better, additional data on habitat preferences of individual species should be obtained.

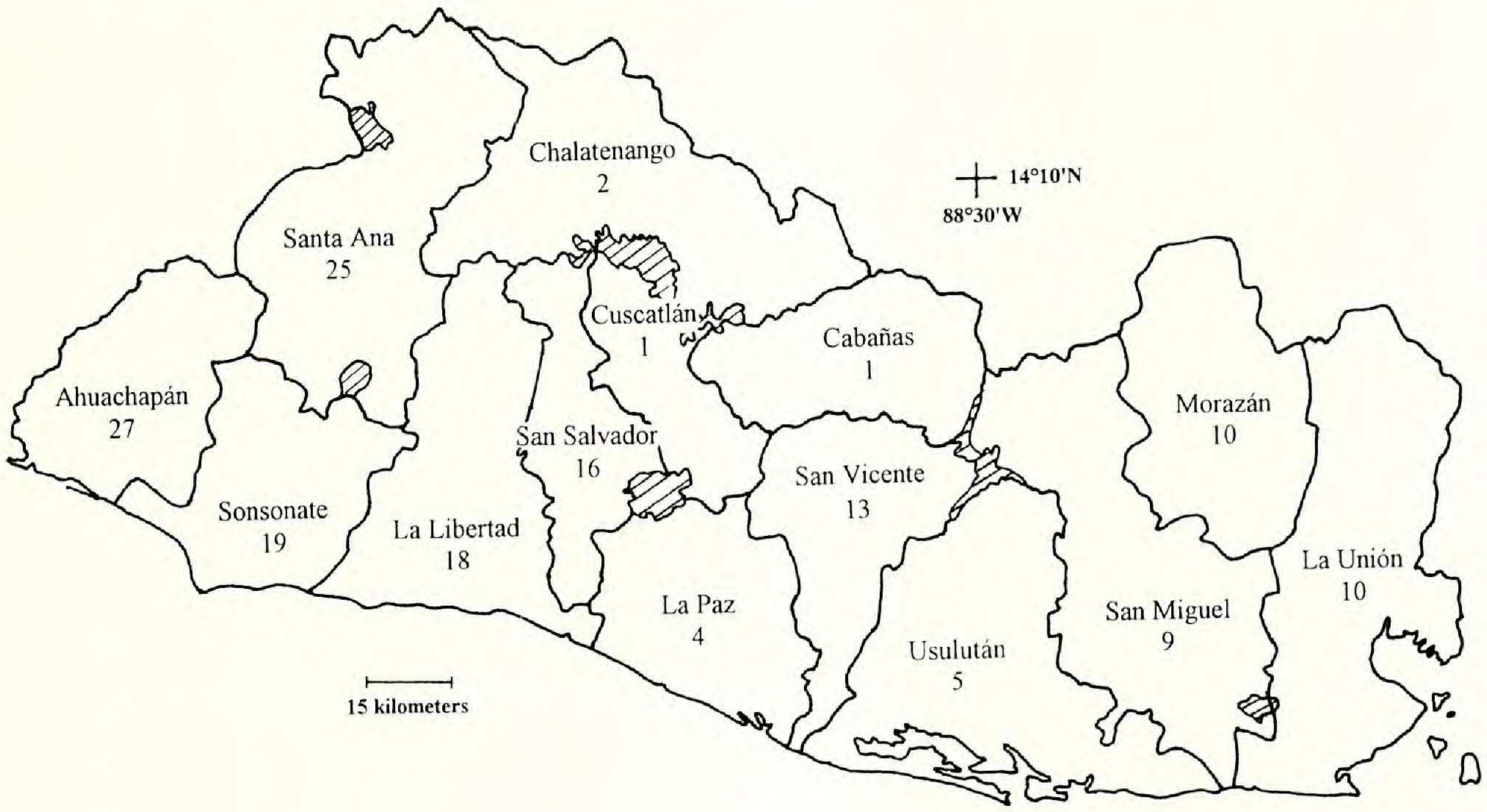


FIG. 1. Map of El Salvador showing political departments and the number of native species of Acanthaceae in each.

The present study reveals that the acanthaceous flora of El Salvador is richer than previously thought. Recent collecting activities show 1) that most of the native taxa collected during the first half of the 20th century are still extant in the country (including some rare species, e.g., *Aphelandra heydeana* and *Carlowrightia hintonii*), and 2) additional taxa not previously known from the country are found there (e.g., *Chileranthemum pyramidatum*). Many of the most commonly collected species are noted to be weedy and/or to grow in disturbed habitats. These tendencies (adaptations) among certain Acanthaceae undoubtedly account for their continued presence in a region with such severe environmental disturbance.

Among the countries of Central America, only Honduras lacks a recent listing of Acanthaceae. A comparison of numbers of native Acanthaceae among the countries in this region reveals that Costa Rica is the most species-rich with 121 (based on Durkee 1986; Gómez-Laurito 1990; Gómez-Laurito & Grayum 1991; Daniel 1993, 1995a; Gómez-Laurito & Hammel 1994; Durkee & McDade 1996), followed by Guatemala with 119 (based on Gibson 1974; Daniel 1990c, 1993, 1995a, 1995c, 1997), Panama with 108 (based on Durkee 1978, 1999; D'Arcy 1987; Daniel & Wasshausen 1990; Daniel 1993; Daniel & McDade 1995), Honduras with 59 (based on Durkee and Daniel's unpublished checklist of Acanthaceae for Flora Mesoamericana), Nicaragua with 57 (based on Durkee 1999, 2001), El Salvador with 43 (see below), and Belize with 40 (based on Daniel 1997).

For each species listed below, the department(s) of occurrence and all collections that I have examined and identified are cited in order to voucher the occurrences and to provide a general indication of distribution within the country. The collections cited likely represent the vast majority of collections of Acanthaceae made in El Salvador. Local names and medicinal or economic uses of the plants as noted on herbarium labels are also given. Identification keys to most of these species can be found in the floristic accounts of nearby regions by Gibson (1974) and Daniel (1995a). Distinguishing features of species not treated in those accounts are provided herein.

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**Acanthus montanus** T. Anderson

La Libertad: *Berendsohn & Berendsohn WB 14* (MO); *Montalvo 6226* (B, MO).

This west African species is cultivated in El Salvador. It can be distinguished from all other Salvadoran Acanthaceae by the combination of its thistlelike habit with mostly radical and pinnatifid leaves, lack of cystoliths, corollas lacking an upper lip, and four monothecous stamens with woolly anthers.

**Anisacanthus tetracaulis** Leonard

Morazán: *Tucker 629* (CAS, EAP, LL, MICH, NY, P, PH, UC, US).

This species, originally described from Honduras (Leonard 1950), has not been reported previously from El Salvador. It is not known from either Guatemala or Chiapas and differs from all other Salvadoran Acanthaceae by the following combination of characteristics: shrubs to 3 m; calyx glandular pubescent; corollas red, ca. 2 cm long; stamens 2, staminodes 0; anthers 2-celled with thecae parallel, lacking basal appendages; pollen 3-colporate, 6-pseudocolpate; capsules ca. 15 mm long, glabrous; seeds flattened, ca. 4 mm in diameter.

**Aphelandra gigantiflora** Lindau

Ahuachapán: *Castillo & López s.n. (ISF00765)* (CAS); *Linares 875* (EAP); *Linares & Martínez 1967* (EAP); *Monro et al. 1934* (CAS, MO), *1991* (B, CAS, MO); *Padilla V. 418* (US), "chuflete"; *Sandoval & Chinchilla 31* (B, US), "camarón morado"; *Sandoval & Sandoval s.n. (MS-00240)* (CAS), "camarón rojo," *s.n. (ISB00806)* (B). "camarón rojo"; *Sermeño 37* (B, MO, US), "camarón grande"; *Standley 19771* (GH, NY, US), *19972* (US; type of *A. padillana* Standl.); *Standley & Padilla V. 2583* (EAP, F).—La Libertad: *Calderón 1364* (NY, US), *1422* (NY, US); *Carlson 89* (F, UC); *Montalvo & Villacorta 6355* (B); *Monro et al. 2269* (CAS, MO); *Renderos & Villacorta s.n. (RL-00036)* (B, MO), "antorcha"; *Villacorta 503* (MO, US), "antorcha"; *Weberling 2155* (M).—Santa Ana: *Linares & Martínez 1084* (EAP), *3939* (EAP).—San Vicente: *Iglesias 3* (F); *Standley 21512* (GH, NY, US), *21680* (NY, US).—Sonsonate: *Standley 19315* (NY, US).

**Aphelandra heydeana** Donn. Sm.

La Libertad: *Calderón 1402* (GH, US).—Santa Ana: *Villacorta & Puig C. 2406* (EAP, B).

**Aphelandra scabra** (Vahl) Sm.

Ahuachapán: *Berendsohn et al. 1438* (B, MO, US), "camarón rojo pequeño"; *Castillo s.n. (ISF00425)* (B), *s.n. (ISF00487)* (CAS), *s.n. (ISF00506)* (B), *s.n. (ISF00546)* (CAS), "cola de camarón," *s.n. (ISF00730)* (CAS), *s.n. (ISF00814)* (CAS), "pitufo"; *Linares & Martínez 3184* (EAP), *3196a* (EAP); *Sandoval s.n. (MS 321)* (CAS), "camarón rojo"; *Sandoval & Linares 1479* (CAS), "camarón rojo"; *Sandoval & Rivera D. 1500* (B), "camarón rojo"; *Sandoval & Sandoval 205* (CAS), "camarón rojo," *s.n. (JBL 1370)* (B, F, MO, US), "camarón rojo," *s.n.* (MO); *Sermeño 48* (B, MO, US), "camarón pequeño"; *Standley 19893* (NY, US); *Standley & Padilla V. 2883* (EAP, F); *Villacorta & Martínez 629* (MO, US).—Cabañas: *Davidse et al. 37116* (CAS, MO).—La Libertad: *Sidwell et al. 461* (B, CAS, MO).—La Paz: *Berendsohn et al. 1193* (B, US).—La Unión: *Barclay 2597* (US); *Grant 713* (F, MICH); *Standley 20672* (NY, US), "cordoncillo," *20855* (US), "palo de golpe."—Morazán: *Tucker 450* (F, LL, MICH, NY, UC, US).—San Miguel: *Seiler 808* (F); *Tucker 931* (F, LL, MICH, NY, PH, UC, US).—San Salvador: *Calderón 210* (NY, US); *Standley 19440* (NY, US).—Santa Ana: *Linares & Martínez 974* (EAP), *1156* (EAP), *2060* (EAP).—San Vicente: *Standley 21220* (US); *Standley &*

*Padilla V. 3708* (EAP, F).—SONSONATE: *Standley 22166* (US), "oreja de coyote."—USULUTÁN: *Carlson 643* (F, UC).

**Aphelandra schiedeana** Schltdl. & Cham.

AHUACHAPÁN: *Molina R. & Montalvo 21799* (EAP, F).—SANTA ANA: *Linares 279* (EAP), "camarón"; *Williams 13563* (EAP, F); *Williams et al. 15159* (EAP, F, MO).—SONSONATE: *Molina R. & Montalvo 21622* (EAP, F, NY); *Renderos & Villacorta 543* (B), "antorcha rosada."

**Asystasia gangetica** (L.) T. Anderson

La Libertad: *Montalvo 6243* (B, MO).

This Old World species is cultivated in El Salvador. It is reported as naturalized in various parts of tropical America (e.g., Costa Rica and Panama). It differs from other Salvadoran Acanthaceae by the combination of its herbaceous habit, unilateral racemes, infundibular corolla with ascending cochlear aestivation, four didynamous stamens with dithecous anthers, and four or fewer seeds lacking hygroscopic trichomes.

**Barleria cristata** L.

LA LIBERTAD: *Berendsohn & Berendsohn WB 12* (MO), *WB 165* (MO); *Villacorta & Renderos s.n. (RV-02603)* (B).—SAN SALVADOR: *Quintana s.n. (JBL 1324)*(B, MO).—SANTA ANA: *Linares & Martínez 842* (EAP), *2193* (EAP).

This Asian species is cultivated in El Salvador; on the label of *Linares & Martínez 842* it is noted that plants grew along a road as a probable escape. The species differs from *B. oenotheroides* by its flowers in leaf axils along the stems (vs. flowers in terminal or subterminal, densely bracteate, four-sided spikes) with blue or white (vs. yellow when fresh) corollas.

**Barleria oenotheroides** Dum. Cours.

LA UNIÓN: *Standley 20822* (NY, US).—SAN MIGUEL: *Monro et al. 2128* (B, CAS, MO); *Renderos et al. 669* (CAS); *Tucker 954* (EAP, F, LL, MICH, NY, PH, UC, US).—SANTA ANA: *Villacorta & Hernández 1003* (US).—SAN VICENTE: *Standley 21740* (NY, US); *Standley & Padilla V. 3671* (EAP, F).—Dept. unknown: *Calderón 1940* (US).

**Blechum pyramidatum** (Lam.) Urb.

AHUACHAPÁN: *Chinchilla s.n.* (MO); *Chinchilla & Ch. A. s.n. (ISB00142)* (B, US), "hierba del pollo"; *Guerrero s.n. (ISF00213)* (B, US), "hierba del tunco"; *Linares & Martínez 2014* (EAP); *Martínez s.n. (ISF00033)*(B, MO); *Sandoval & Sandoval 313* (CAS), "hierba buenilla."—LA LIBERTAD: *Flores s.n. (WB-00405)* (B), "corrimieneto"; *Renderos & Villacorta s.n. (RL-00038)* (B, US); *Villacorta & Berendsohn s.n. (JBL00556)* (MO); *Williams & Molina R. 15067* (EAP, F).—LA PAZ: *Sidwell et al. 621* (CAS).—MORAZÁN: *Tucker 434* (F, LL, MICH, NY, UC, US).—SAN SALVADOR: *Calderón 204* (NY, US); *Carlson 45* (F, UC); *Standley 19132* (US), *19202b* (US), "correflución," remedy for swellings, *19373* (US); *Villacorta 8140* (US).—SONSONATE: *Molina R. & Montalvo 21702* (EAP, F); *Standley 21835* (US), "cuchansayo," *22095* (US), "corredora"; *Tucker 1336* (F, MICH, UC, US).

**Bravaisia integerrima** (Spreng.) Standl.

LA LIBERTAD: *Allen 7201* (EAP, F, LL, MICH, NY, US).—SAN MIGUEL: *Tucker 864* (F, K, MICH, UC, US); *Villacorta 2379* (EAP, B).—USULUTÁN: *Calderón 2138* (GH, US).

**Carlowrightia hintonii** T. F. Daniel

AHUACHAPÁN: *Chinchilla et al. s.n. (ISB00283)* (B, US), "hierba del coral"; *Sandoval & Chinchilla 186* (B, US), "hierba de corral"; *Standley & Padilla V. 2581* (EAP, F).

A description, illustration, and discussion of this species were provided by Daniel (1983). Although also known from western Mexico, the only known occurrence of *C. hintonii* in Central America is in El Salvador. A key to the three Central American species of *Carlowrightia* was provided by Daniel (1993). *Carlowrightia hintonii* differs from other Salvadoran Acanthaceae by the combination of its white, pseudopapilionaceous corollas; pubescent capsules; and relatively large (4–4.8 mm in diameter), lenticular seeds with a swollen and irregularly pectinate margin.

The species is known only from four collections, the type from Mexico and the three Salvadoran collections cited above. Daniel (1983) discussed the differences between the Mexican and Salvadoran collections known at that time. *Sandoval & Chinchilla 186* and *Chinchilla et al. s.n.* differ from *Standley & Padilla V. 2581* by their cauline pubescence (antrorse and entirely eglandular vs. erect to flexuose and including glandular trichomes). *Sandoval & Chinchilla 186* (collected in 1992) and *Chinchilla et al. s.n.* (collected in 1994) were the first collections of the species from El Salvador in 45 years and represent the rediscovery (and persistence in the country) of a rarely collected species. Additional collections and study of this species are desirable.

**Chileranthemum pyramidatum** (Lindau) T. F. Daniel

AHUACHAPÁN: *Sandoval & Chinchilla 618* (CAS, MO), "estefanote."

This is the first report of this genus from El Salvador and the first report of its occurrence south or east of Guatemala. The species can be distinguished from all other Salvadoran Acanthaceae by its androecium of two dithecous stamens and two staminodes, its heterostylous flowers with pink-purple corollas, and its calyces 11–14 mm long with broadly triangular lobes 2–4 mm wide. The only known Salvadoran collection, that cited above, differs from plants occurring in Mexico and Guatemala by its bracteoles, which are lanceolate to lance-subulate and 3.5–8 mm long (vs. triangular-subulate to subulate and 1–4 mm long); calyx with the tube (8–10 vs. 2.5–5 mm long) longer than (vs. shorter than to as long as) the lobes; and capsule with sparse eglandular trichomes distally (vs. glabrous). The specimen of *Sandoval & Chinchilla 618* at MO differs from that at CAS (and from other collections of the species) by its multiflowered (up to 16 flowers vs. 1–3-flowered) dichasia from the axils of distal leaves and bracts (vs. in a terminal thyrse). Other aspects of this species were discussed by Daniel (1995b). Additional material from El Salvador is desirable in order to understand better the variation of the species in that country.

**Crossandra infundibuliformis** Nees

LA LIBERTAD: *Berendsohn & Berendsohn WB 63* (MO); *Montalvo 6239* (B).

This species, native to Africa, Arabia, and the Indian subcontinent, is cultivated in El Salvador. It differs from all other Salvadoran Acanthaceae by the following combination of characters: perennial herbs with long (overtopping vegetative

growth) pedunculate spikes; five heteromorphic calyx lobes; reddish or orangish corollas with a single, five-lobed lip; and four monothecous stamens. The distinctions between the commonly cultivated species *C. nilotica* Oliver and *C. infundibuliformis* were discussed by Daniel and Chuang (1998).

**Dicliptera membranacea** Leonard

AHUACHAPÁN: *Standley 19809* (GH, US); *Standley & Padilla V. 2600* (F, US).—SONSONATE: *Standley 21828* (GH, NY, US).

These specimens most closely resemble *D. membranacea* among the Central American species of *Dicliptera*. Because the genus is in need of revision, the determination must be considered somewhat tentative. This species has not been reported previously from El Salvador.

**Dicliptera sexangularis** (L.) Juss.

AHUACHAPÁN: *Molina R. & Montalvo 21815* (EAP, F, NY); *Standley 20224* (US).—LA LIBERTAD: *Standley 23414* (US).—SAN SALVADOR: *Calderón 2076* (US); *Standley 22552* (US), *22689* (US).—SAN VICENTE: *Standley 21415* (US).—SONSONATE: *Standley 21802* (US), "tinta montañes," *22267* (US), *23435* (US).

On several collections it is noted that the species grows in disturbed habitats or is weedy.

**Dicliptera unguiculata** Nees

AHUACHAPÁN: *Standley 20030* (NY, US); *Standley & Padilla V. 2730* (F).—SAN SALVADOR: *Calderón 2241* (NY, US).—SANTA ANA: *Linares & Martínez 2086* (EAP).

**Dicliptera** sp.

MORAZÁN: *Tucker 748* (CAS, UC, US).

This collection from the southern slopes of Mt. Cacaguatique at 1300 meters represents a taxon with similarities to *D. membranacea*. It differs from that species by its larger bracts subtending the cymes (14–30 × 4.5–11 vs. 6–15 × 3.5–6 mm) that are conspicuously petiolate (vs. sessile to subsessile), outer cymule bracteoles ovate to elliptic (vs. obovate to subelliptic), and longer corollas (26–30 mm vs. 16–26 mm). Its taxonomic disposition must await revisionary studies among all of the American species of the genus.

**Dyschoriste hirsutissima** (Nees) Kuntze

Dept. unknown: "Andes de S. Salvador," *von Tuerckheim 83039* (MPU).

The exact locality of this collection is unknown to me. Von Tuerckheim collected extensively in portions of Guatemala but was not noted to have collected in El Salvador by Vegter (1988). Whether from Guatemala or El Salvador, this is the first report of the species south of Chiapas, Mexico.

**Dyschoriste quadrangularis** (Oerst.) Kuntze

AHUACHAPÁN: *Standley 19746* (NY, US).

**Elytraria imbricata** (Vahl) Pers.

AHUACHAPÁN: *Castillo s.n. (ISF00753)* (CAS); *Chinchilla s.n.* (MO); *Chinchilla & Ch. A. s.n. (ISB00135)* (B), "coquillo"; *Linares & Martínez 2002* (EAP); *Padilla V. 131* (US), *348* (US), "canutilla," "tabaquillo," *430* (US), "coquillo"; *Sandoval & Chinchilla 1503* (B, US), "coquillo"; *Villacorta 654* (MO, US), "culantrillo," "coquito," "guacoco."—LA LIBERTAD: *Campos & Ibarra s.n. (RL-00048)* (B); *Carlson 299* (EAP, F, UC), "guacoquillo"; *Flores s.n. (JBL00588)* (MO), "coquillo"; *Rohweder 3313* (MO); *Villacorta 606* (MO); *Williams & Molina R. 15256* (EAP).—LA UNIÓN: *Grant 710* (F, MICH).—MORAZÁN: *Tucker 467* (F, LL, MICH, NY, P, PH, UC, US).—SAN MIGUEL: *Seiler 804* (F); *Standley 21044* (US), "culantrillo."—SAN SALVADOR: *Calderón 55* (NY, US), "coquillo"; *Standley 19200a* (US), "coquillo," crushed leaves and roots used as remedy for pimples, *19456* (US), "coquillo," remedy for stomach troubles, *22600* (US), "guacoco," remedy for dysentery; *Velasco 8928* (US).—SANTA ANA: *Berendsohn WB-506* (B, MO); *Linares 669* (EAP).—SAN VICENTE: *Standley 21637* (US), "trencilla."—SONSONATE: *Standley 21962* (US), "trencilla," remedy for dysentery, *23532* (NY, US), "cacahuillo."

**Eranthemum pulchellum** Andr.

LA LIBERTAD: *Berendsohn & Berendsohn 5* (MO); *Montalvo 6223* (CAS, MO).

This native of the Indian subcontinent is cultivated in El Salvador. It differs from all other Salvadoran Acanthaceae by the combination of its densely bracteate spikes, prominently nervose bracts, blue corollas with contorted aestivation and five subequal lobes, two stamens with dithecous anthers, and two staminodes.

**Fittonia albivenis** (Lindl. ex Veitch) Brummitt

LA LIBERTAD: *Berendsohn WB 66* (MO), *WB 67* (MO); *Montalvo 6280* (B, MO).

This native of western and northern South America is cultivated in El Salvador. It differs from other Salvadoran Acanthaceae by the combination of its low (often matlike) stature, leaves with prominent reddish or whitish veins, small (ca. 10–15 mm long) and yellowish corollas, and two dithecous stamens.

**Graptophyllum pictum** (L.) Griff.

SAN VICENTE: *Standley & Padilla V. 3528* (F).

This Papuasian species is cultivated in El Salvador. It differs from other Acanthaceae there by the combination of its variegated leaves, calyx 3–5 mm long, metallic pink corollas with a conspicuously funnelform tube and a strongly bilabiate limb, and an androecium of two dithecous stamens and two staminodes. Guzmán (1950) noted that the leaves are used in washing.

**Hemigraphis alternata** (Burm. f.) T. Anderson

LA LIBERTAD: *Berendsohn 8* (MO).

This species, native to southeastern Asia, is cultivated in El Salvador. It differs from other Salvadoran Acanthaceae by the combination of its creeping habit, cordate leaves with the abaxial surface purplish and the margin crenate, inflorescences of pedunculate spikes, small (ca. 10 mm long) and white corollas with contorted aestivation, four stamens with dithecous anthers, and linear-cylindric capsules less than 10 mm long.

**Henrya insularis** Nees ex Benth.

AHUACHAPÁN: *Sandoval & Chinchilla 1069* (CAS, MO), "buenilla de altura"; *Sandoval & Sandoval s.n. (ISB00844)* (CAS), "hierba del cadejo falsa"; *Standley 20221* (US; type of *H. reticulata* Happ); *Standley & Padilla V. 2582* (F), *2743* (EAP, F).—CHALATENANGO: *Molina R. & Montalvo 21584* (EAP, F).—LA LIBERTAD: *Villacorta & Lemus 246* (B, F, MO); *Wilbur et al. 16365* (F, MICH, MO).—SAN SALVADOR: *Calderón 2283* (F; type of *H. longipes* Happ); *Standley 20449* (GH, NY, US), *23103* (NY, US).—SAN VICENTE: *Standley 21424* (GH, NY, US); *Standley & Padilla V. 3358* (F), *3583* (EAP, F, UC, US).—SONSONATE: *Standley 21801* (NY, US).

The various forms of this species were discussed by Daniel (1990a).

**Hypoestes phyllostachya** Baker

LA LIBERTAD: *Flores JF-00143* (MO); *Monro et al. 2323* (B, CAS, MO).

This Malagasy species appears to be both cultivated and naturalized in El Salvador; *Flores 143* is from a botanical garden, whereas *Monro et al. 2323* is noted to be weedy in a cafetal at 1000 m. This commonly cultivated plant is rapidly becoming established in parts of Mexico (Daniel 1995a) and Central America [e.g., Costa Rica: Feldman 1998; Feldman & Haber 1998; Honduras: *Tróchez 244* (MO), *Gutiérrez-Cortines 176* (MO)]. It is easily distinguished from all other Salvadoran Acanthaceae by the combination of leaves with pink spots and two stamens with monothecous anthers. It is described and illustrated by Daniel (1995a).

**Justicia aurea** Schltdl.

AHUACHAPÁN: *Renderos 110* (B), "antorcha amarilla," cultivated.—LA LIBERTAD: *Berendsohn 10* (CAS), cultivated, *356* (CAS), cultivated; *Carlson 142* (EAP, F, UC); *Lemus s.n. (Berendsohn 902)* (B, MO).—MORAZÁN: *Tucker 785* (F, MICH, UC, US).—SAN SALVADOR: *Molina R. & Montalvo 21854* (EAP, F, NY); *Standley 20558* (US), *23178* (MO, NY, US).—SANTA ANA: *Linares 324* (EAP); *Williams et al. 15071* (F).—SONSONATE: *Molina R. & Montalvo 21764* (EAP, F).

This species is both cultivated and native in El Salvador. *Renderos 110* has red corollas and conforms to *J. aurea* forma *erythrina* (Standl. & Steyerm.) D. N. Gibson.

**Justicia betonica** L.

LA LIBERTAD: *Villacorta 243* (MO, US).

This native of the Indian subcontinent is cultivated in El Salvador. The species has not been reported from Chiapas or Guatemala although it is often cultivated for ornament in tropical America and becomes naturalized in some tropical regions (e.g., Hawai'i). It differs from other Salvadoran *Justicia* by its long (up to 16 cm) spikes with white to pinkish (with dark purple markings) corollas subtended by relatively large (ca. 10 mm long) bracts that are white with dark green venation.

**Justicia brandegeana** Wassh. & L. B. Sm.

LA LIBERTAD: *Berendsohn 13* (MO).

This species is native to the Sierra Madre Oriental of northeastern Mexico and is cultivated in El Salvador. It can be distinguished from native Salvadoran

species of *Justicia* by its dense nodding spikes with ovate, reddish bracts subtending elongate, white (spotted with maroon) corollas.

**Justicia breviflora** (Nees) Rusby

CUSCATLÁN: *Calderón 2413* (F; type of *J. salvadorensis* Standl.).

The morphological diversity of *J. breviflora* in southern Mexico and northern Central America was discussed by Daniel (1995a). Study of the holotype of *J. salvadorensis* reveals that it is indistinguishable from *J. breviflora* as currently treated, and the former name is herewith included within the synonymy of the latter.

**Justicia carthaginensis** L.

AHUACHAPÁN: *Castillo s.n. (ISF00495)* (B), "hierba del susto"; *Chinchilla & Chinchilla R. s.n. (ISB00279)* (CAS, US), "hierba del susto o santísima tr"; *Escobar & Sandoval s.n. (ISB00789)* (B), "hierba de jesús"; *Sandoval & Chinchilla 77* (B, US), "santísima trinidad"; *Sermeño s.n.* (MO, US), "hierba del susto," "hierba buenilla del susto"; *Standley 19723* (MO, NY, US), "hierba de la santísima trinidad"; *Standley & Padilla V. 2600* (EAP); *Villacorta 2226* (B, MO), "hierba del susto," cultivated as dooryard plant and used to bathe frightened children.—LA LIBERTAD: *Molina et al. 16682* (EAP).—LA PAZ: *Berendsohn et al. 1191* (B, US), "hierba del susto."—LA UNIÓN: *Grant 708* (F).—SAN SALVADOR: *Calderón 199* (US), "hierba del susto," *1265* (NY, US), "hierba del susto"; *Standley 19264a* (US), "hierba del susto," remedy for spasms in children, *19432* (NY, US), "hierba del susto."—SANTA ANA: *Linares 3958* (EAP); *Linares & Martínez 3974* (EAP).—SONSONATE: *Standley 19333* (NY, US), "hierba del susto," remedy for fits and spasms in children.

Both narrow-leaved individuals (e.g., *Villacorta 2226*) and broad-leaved individuals (e.g., *Berendsohn et al. 1191*) are represented among the Salvadoran collections of this species. Daniel (1995a) discussed narrow-leaved plants of *J. carthagenensis* that were treated by Gibson (1972) as a distinct species, *J. corynimorpha* D. N. Gibson.

Labels of several Salvadoran specimens note that plants grow in disturbed habitats.

**Justicia colorifera** V. A. W. Graham

AHUACHAPÁN: *Chinchilla et al. s.n. (ISB00058)* (CAS, US); *Guerrero s.n. (ISF00207)* (B, US), "arbusto de tinta"; *López s.n. (ISF00527)* (B); *Martínez & S.C. s.n. (ISF00025)* (B, US), "tintura de yodo ó cuajatinta," "planta medicinal para curar catarros, reumatismo, cura el bocio"; *Padilla V. 96* (US), "sacatinta," "hierba de Santa Inés," "hierba de la santísima trinidad," *340* (US), "sacatinta"; *Sandoval et al. s.n. (ISB00829)* (CAS), "curarina negra"; *Standley 19715a* (US), "saca-tinta," remedy for gonorrhoea; *Standley & Padilla V. 2925* (EAP, F).—LA LIBERTAD: *Montalvo 6232* (B, MO, US), remedy for whooping cough, source of ink; *Sidwell et al. 484* (CAS, MO).—SAN SALVADOR: *Calderón 273* (NY, US), "sacatinta"; *Carlson 492* (F); *Renson 137* (NY, US), "zaca-tinta"; *Standley 22795* (MO, NY, US), "saca-tinta."—SANTA ANA: *Carlson 750* (F); *Linares & Martínez 2458* (EAP, MO), *2469* (EAP, MO); *Standley & Padilla V. 3046* (EAP, F); *Villacorta & Hernández 990* (B, MO, US), "cuajatinta."—SAN VICENTE: *Standley 21411* (NY, US), "saca-tinta"; *Standley & Padilla V. 3391* (EAP), *3704* (EAP, UC).—SONSONATE: *Pittier 1970* (NY, US); *Standley 22154* (NY, US), "saca-tinta"; *Villacorta & Navarrete (RV-02670)* (B).

This species has been commonly confused with *J. spicigera* (see Daniel 1995a). Most Salvadoran collections have been identified as the latter species. Both species are often cultivated in Central America for use as a bluing agent in laundering fabric (based on information on most specimens cited above and in Williams, 1981). Many, but not all, collections were noted to have come from cultivated

plants. Calderón and Standley (1941) questioned whether this species, as *Jacobinia spicigera* (Schltdl.) L. H. Bailey, is native in El Salvador.

Daniel (1995a) noted that plants of this species in Chiapas, Mexico, have red corollas. Some of the Salvadoran collections note that the corollas are red and yellow. Collections of this species with fruits are rare and were unknown to Daniel (1995a). Fruits and seeds are present on both Linares and Martínez collections from Santa Ana and can be described as follows: capsules 15–19 mm long, glabrous, stipe 6–9 mm long, head with a slight medial constriction, 9–10 mm long; seeds 4, ± flattened laterally (sublenticular), 3–4 mm long, 2.7–3.1 mm wide, surface subrugose, margin ± tuberculate.

**Justicia comata** (L.) Lam.

La Unión: *Calderón 2372* (F, US); *Standley 20963* (US).—Santa Ana: *Standley & Padilla V. 3097* (EAP, F).—San Vicente: *Fassett 28345* (F, MICH), *29188* (F, MICH); *Standley 21446* (US).—Usulután: *Villacorta s.n. (RV-02602)* (B).—Dept. unknown: *Seiler 590* (F).

**Justicia pectoralis** Jacq.

La Libertad: *Villacorta 2265* (B), "hierba del susto," used to bathe recently born children as a remedy against fright, cultivated.

This collection was noted to have been cultivated in the Jardín Botánico La Laguna. The same local name and medicinal use ascribed to this species on the specimen label were recorded for *J. carthagenensis* and some confusion may be involved. The sole specimen examined comprises a young plant with floral buds only. The specimen shows one unusual character, the presence at some inflorescence nodes of more than one axillary branch resulting in a subverticillate aspect to some of the branches along the primary inflorescence rachis. This is one of the diagnostic characteristics of *J. comata*, a species often confused with *J. pectoralis*. These two species can be distinguished by the following couplet:

Young stems unifariously pubescent; inflorescence branches usually alternate or opposite at nodes (not appearing verticillate); bracts and bracteoles abaxially glandular; calyx abaxially glandular, lobes unequal with the posterior lobe greatly reduced in size; corolla 7.5–10 mm long, externally pubescent throughout; capsule 5.5–9 mm long. *J. pectoralis*

Young stems glabrous or sparsely bifariously pubescent; inflorescence branches congested at nodes and appearing verticillate; bracts and bracteoles abaxially eglandular; calyx abaxially glabrous, lobes equal; corolla 3–6 mm long, externally pubescent on anterior side only; capsule 3–4 mm long. *J. comata*

With the exception noted above, *Villacorta 2265* agrees with *J. pectoralis* in all other characters that can be observed on the specimen. *Justicia pectoralis* is also to be expected as a native plant in noncultivated habitats in the country.

**Justicia ramosa** (Oerst.) V. A. W. Graham

Ahuachapán: *Sermeño 139* (B, MO, US).

This species has not previously been reported for El Salvador. Daniel (1995a) noted its occurrence in Mexico, Guatemala, Honduras, Costa Rica, and Colombia (based, in part, on information provided by Hilsenbeck, 1983, who treated this species as *Siphonoglossa ramosa* Oerst.).

**Justicia soliana** Standl.

AHUACHAPÁN: *Berendsohn et al. 1354* (B, MO, US); *Calderón s.n. (ISF 826)* (CAS), "cuajatinta"; *Chinchilla s.n. (ISB00106)*(B, MO, US), "camaroncillo"; *Chinchilla et al. s.n. (JBL1418)*(B, MO, US); *Chinchilla R. & Pérez s.n. (ISB00785)* (CAS), "camaroncillo"; *Davidse et al. 37428* (B, CAS, MO); *Linares 887* (EAP); *Martínez s.n. (ISF00078)*, "tinterón"; *Molina R. & Montalvo 21798* (EAP, F, NY); *Morono et al. 1906* (CAS, MO), *1986* (CAS, MO); *Padilla V. 13* (US, in part); *Sandoval s.n. (MS-357)* (CAS), "tinta montés"; *Sandoval & Chinchilla 38* (B, US), "langosta"; *Sandoval & Sandoval s.n. (MS-00245)* (CAS), "fosforito," *s.n. (JBL01366)* (CAS, MO), "fosforito de altura"; *Sermeño 18* (MO, US); *Standley 19777* (NY, US), *20009* (NY, US), *20056* (NY, US); *Standley & Padilla V. 2555* (EAP, F, UC), *2669* (EAP, US).—LA LIBERTAD: *Calderón 1408* (MO, NY, US).—SAN MIGUEL: *Standley 21149* (NY, US).—SANTA ANA: *del Cid 1982* (US); *Williams 13562* (EAP); *Williams et al. 15171a* (EAP), *15183* (EAP, F, MO, US).—SONSONATE: *Linares 2508* (EAP, MO); *Molina R. & Montalvo 21599* (EAP, F, NY); *Standley 19313* (NY, US), *19325* (US; type).

*Chinchilla R. & Pérez s.n.* lacks the glands on the distal portion of the bracts and bracteoles that are otherwise present in individuals of this species.

**Justicia spicigera** Schltdl.

SAN SALVADOR: *Renson 136* (NY, US), used as a bluing agent in laundry.—Dept. unknown: "Amer. centr. Andes de S. Salvador," *von Tuerckheim 83038* (MPU).

See above under *J. colorifera*.

**Justicia sulphurea** (Donn. Sm.) D. N. Gibson

AHUACHAPÁN: *Padilla V. 40* (US); *Standley 20141* (GH, NY, US).

**Lophostachys guatemalensis** Donn. Sm.

AHUACHAPÁN: *Chinchilla s.n. (ISB00022)*(CAS, MO, US), "chorcha de gualchoca"; *Padilla V. 13* (US, in part), *25* (US), "rayón"; *Sandoval & Chinchilla 185* (B), "chorcha de gualchoca"; *Sermeño 70* (B, US), "hierba santa."—SANTA ANA: *Villacorta & Hernández 991* (B, MO, US).—SAN VICENTE: *Standley 21673* (GH, US).—Dept. unknown: *Calderón 2016* (US).

**Megaskepasma erythrochlamys** Lindau

LA LIBERTAD: *Berendsohn & Berendsohn WB 16* (MO), *WB 158* (MO); *Montalvo 6225* (B, MO).—SANTA ANA: *González 394* (B), "plumero-antorcha roja."

Although the native range of *M. erythrochlamys* is not known with certainty, this species is usually presumed to have come from northern South America. It appears to be only cultivated in El Salvador; however, on the label of *González 394* it is noted only that the plant grew along a street. It differs from other genera of Acanthaceae in El Salvador by the combination of its large inflorescences with bright reddish bracts more than 3 cm long, white corollas, and 6- or more-aperturate pollen with the surface covered by discrete insulae.

**Nelsonia canescens** (Lam.) Spreng.

AHUACHAPÁN: *Chinchilla s.n. (ISB00195)*(B, MO, US), "larva de papaluta"; *Sandoval & Sandoval s.n. (ISB00818)* (B), "hierbabuenilla de costa."—LA LIBERTAD: *González 304* (B); *González & Villacorta 137* (B, US).—LA PAZ: *Calderón 291* (MO, NY, US).—LA UNIÓN: *Standley 20933* (NY, US).—SAN MIGUEL: *Standley 21019* (US).—SAN SALVADOR: *Molina R. & Montalvo 21539* (EAP, F, NY).—SANTA

ANA: *Standley & Padilla V. 3061* (EAP, F).—SAN VICENTE: *Standley 21181* (MO, NY, US); *Standley & Padilla V. 3679* (EAP, F, US).—SONSONATE: *Standley 21916* (MO, NY, US), *22025* (US), *23441* (MO, NY, US).

This species is not presently known from either Guatemala or Chiapas but might be expected to occur in both. It can be distinguished from other Salvadoran Acanthaceae by the combination of its opposite and evenly dispersed leaves, densely pubescent and densely bracteate spikes, heteromorphic calyx lobes with the anterior pair fused for more than one-half their length, twice divided stigma, and capsules lacking retinacula. Collections note that the species often grows in disturbed habitats where it can be weedy.

Most American specimens have been named either as *N. campestris* R. Br. or *N. brunelloides* (Lam.) Kuntze. Opinion varies as to whether a single variable species (Hossain 1984) or several species (Bremekamp 1964; Barker 1986) should be recognized. The genus appears to be native in Africa, Asia, and Australia. It is not known with certainty whether it is native or introduced in tropical America. Hossain (1984) noted that *N. canescens* is a pantropical weed that was likely introduced into Mexico, Central America, and the West Indies. Humboldt and Bonpland collected it from northern South America in the early 19th century. If introduced into the New World by human activities, it must have been so at a relatively early time. Until additional data are presented on the taxonomy and distribution of the genus, it is here tentatively treated as native in the American tropics.

**Odontonema cuspidatum** (Nees) Kuntze

SANTA ANA: *Montalvo & de Menjiver 3969* (F).

This species, native to southern Mexico and the West Indies, is cultivated in El Salvador.

**Odontonema tubaeforme** (Bertol.) Kuntze

AHUACHAPÁN: *Calderón s.n. (ISF00845)* (CAS); *Castillo s.n. (ISF00512)* (B); *Chinchilla & Sandoval s.n. (ISB00175)* (B, MO), "lombricera de altura"; *Chinchilla et al. s.n. (ISB00104)* (CAS), "lombricera roja de altura"; *D.F.M. s.n. (ISF00038)* (B), "cola de camarón"; *F.C.P. & R.A.S. s.n. (ISB00215)*(B, MO), "lombricera roja," "utilizada como medicinal para expulsar lombrices"; *Padilla V. 14* (US), "flor de chipe," *19* (US), "San Benito," *260* (US), "chula"; *Sandoval s.n. (MS-352)* (CAS), "lombricera roja"; *Sandoval & Sandoval 287* (CAS), "lombricera roja," *s.n. (ISB00794)* (B), "lombricera roja"; *Seiler 940* (F); *Sermeño 38* (B, MO, US), "lombricera"; *Standley 19808* (US), *20155* (NY, US), "palito de coral"; *Standley & Padilla V. 2623* (EAP, F, US).—LA LIBERTAD: *Carlson 83* (EAP, F, UC); *Lemus s.n. (Berendsohn 901)*(B, MO); *Villacorta & Araniva RV-00020* (MO).—MORAZÁN: *Tucker 702* (F, MICH, UC, US).—SAN SALVADOR: *Leppik 20* (EAP); *Molina R. & Montalvo 21850* (EAP, F, NY); *Standley 20539* (US).—SANTA ANA: *Linares 4176* (EAP); *Montalvo & Vargas 3245* (F).—SAN VICENTE: *Standley 21666* (US).—SONSONATE: *Pittier 1944* (NY, US); *Standley 21870* (US).—Dept. unknown: *Calderón 333* (NY, US), "sacatinta montés," *1969* (US).

Some of the Salvadoran collections (e.g., *Carlson 83*, *Montalvo & Vargas 3245*, *Tucker 702*, and *Villacorta & Araniva RV-00020*) represent the species as circumscribed by Daniel (1995c). However, most of the specimens listed above share similarities with both *O. tubaeforme* and *O. glaberrimum* (M. E. Jones) V. M. Baum, a species of Mexico and Guatemala. They differ from the former and resemble the latter by their glabrous (or nearly so) rachises and opposite dichasia.

They differ from latter and resemble the former by their cauline pubescence (bifarious, retrorse eglandular trichomes 0.2–0.5 mm long) and corollas (i.e., throats 9–11 mm long and limbs 3–5 mm long). Other specimens (e.g., *Pittier 1944*, *Standley 21870*, and *Standley & Padilla V. 2623*) resemble *O. tubaeforme* but apparently lack only the whorled dichasia characteristic of that species. *Sermeño 38* at MO lacks whorled dichasia whereas the specimen at US has them. Both specimens have a glabrous rachis, however. It is not known whether these specimens represent an expression of *O. tubaeforme* that often lacks whorled dichasia and is variable in pubescence, hybrids involving *O. tubaeforme* and *O. glaberrimum*, or one or more other species that remain inadequately circumscribed. Until species limits have been adequately studied in Central American *Odontonema*, all of these collections are tentatively treated as part of a morphologically variable *O. tubaeforme*.

**Pachystachys lutea** Nees

La Libertad: *Berendsohn & Berendsohn WB 214* (MO); *Montalvo 6224* (B, MO), "camarón amarillo."

This native of Peru is cultivated in El Salvador. It differs from other Salvadoran Acanthaceae by the following combination of character states: large (i.e., concealing the calyx and bracteoles), cordate to broadly ovate, and bright yellow bracts arranged in a dense, four-sided terminal spike; large (45–55 mm long) and white corollas; and two stamens with green, dithecous anthers.

**Pseuderanthemum carruthersii** (Seem.) Guillaumin

La Libertad: *Choussy 24* (US); *Standley 23667* (US).

This native of the western Pacific region is cultivated in El Salvador. Numerous previously recognized species have been treated recently under this name (e.g., Howard 1989; Fosberg et al. 1993).

**Pseuderanthemum fasciculatum** (Oerst.) Leonard

Ahuachapán: *Standley & Padilla V. 3013* (EAP, F).—Chalatenango: *Tucker 1012* (ARIZ, COLO, EAP, F, GH, LL, MICH, MIN, MO, NY, PH, UC, US).—Morazán: *Seiler 1054* (F).—Santa Ana: *Carlson 859a* (F), *878* (F, UC); *Molina R. & Molina 12643* (EAP); *Molina R. et al. 16886* (EAP, F).

This species was noted as occurring in El Salvador by Daniel (1995a). Most specimens cited above had been identified as *P. praecox* (Benth.) Leonard, and Gibson (1974) noted the occurrence of *P. praecox* in El Salvador. The putative distinctions between these and other species of *Pseuderanthemum* in northern Latin America are in need of study.

**Pseuderanthemum** sp.

La Libertad: *Standley 23680* (US); *Villacorta & López 269* (MO).—San Salvador: *Calderón 650* (US); *Standley 23631* (GH, NY, US).—Dept. unknown: *Choussy 45* (US).

There is neither a satisfactory treatment of *Pseuderanthemum* nor a revision of the various species of the genus that are cultivated in the New World. These collections, all from cultivated plants, differ somewhat from those of *P. carruthersii*, but determination of their identity or identities must await additional studies of

the genus. Calderón and Standley (1941) listed *P. laxiflorum* (A. Gray) Hubbard, *P. malaccense* Lindau, and *P. pulchellum* Merrill as species cultivated in El Salvador based on several of the collections cited above.

**Ruellia donnell-smithii** Leonard

AHUACHAPÁN: *Sandoval & Chinchilla 70* (CAS, US), "hierba de bermuda"; *Standley 20308* (NY, US); *Standley & Padilla V. 2844* (EAP, F).—LA LIBERTAD: *Carlson 189* (F, UC).—SAN SALVADOR: *Standley 22513* (US).—SONSONATE: *Pittier 1971* (NY, US); *Standley 19337* (US), *21759* (NY, US), *22099* (NY, US), *23446* (US).—Dept. unknown: *Calderón 1908* (US).

**Ruellia geminiflora** H. B. K.

Morazán: *González 147* (B).—SAN SALVADOR: *Renson 269* (NY, US).—SANTA ANA: *Standley 20392* (GH, US).

On the label of *González 147* unspecified medicinal uses are noted for this species. Guzmán (1950) reported that the roots are dried and made into a powder that is efficacious as an emetic and that an alcoholic tincture made from the plant is useful for chronic jaundice and intestinal obstructions.

**Ruellia hookeriana** (Nees) Hemsl.

SANTA ANA: *Calderón 985* (US); *Davidse & Pohl 2065* (MO); *Linares 571* (EAP); *Linares & Martínez 2894* (EAP); *Standley 20414* (US).—Dept. unknown: *Choussy 69* (US).

El Salvador was included within the range of this species by Daniel (1995a), and the specimens cited above substantiate its occurrence there for the first time.

**Ruellia inundata** H. B. K.

AHUACHAPÁN: *Castillo s.n. (ISF00813)* (CAS), "hierba del cadejo"; *Chinchilla s.n. (ISB00346)* (B, US), "hierba del cadejo"; *Linares & Martínez 1974* (EAP); *Sandoval & Chinchilla 157* (B, MO, US), "hierba del cadejo"; *Sandoval & Sandoval 244* (CAS), "hierba del cadejo"; *Standley 19915* (NY, US), *20031* (US), "hierba de cabra"; *Villacorta & Martínez 641* (MO, US).—LA LIBERTAD: *Cruz s.n.* (*Berendsohn 472*) (B); *Molina R. et al. 16686* (EAP, F, NY); *Villacorta & Berendsohn 1035* (B, MO).—LA UNIÓN: *Beetle 26266* (US); *Grant 712* (F, MICH), *729* (F); *Standley 20665* (NY, US), "chancho de monte."—SAN MIGUEL: *Tucker 885* (F, MICH, UC, US).—SAN SALVADOR: *Calderón 225* (NY, US); *Renson 109* (NY, US); *Standley 19443* (NY, US).—SANTA ANA: *Berendsohn 505* (B, MO); *Linares 354* (EAP), *2133* (EAP).—SAN VICENTE: *Standley 21257* (US); *Standley & Padilla V. 3457* (EAP, F).—SONSONATE: *González 74* (B, US); *Standley 21902* (US).—USULUTÁN: *Carlson 650* (F).

**Ruellia malacosperma** Greenm.

SAN SALVADOR: *Calderón 570* (GH, US), "ala de angel"; *Standley 22636* (GH, NY, US), "campanilla ala de angel."

The collections cited above were noted as either cultivated or found in a garden. Daniel (1995a) discussed this species and its close relative *R. coerulea* Morong (=*R. brittoniana* Leonard).

**Ruellia megasphaera** Lindau

AHUACHAPÁN: *Standley 19968* (US).—SAN SALVADOR: *Standley 20498* (GH, NY, US).—SANTA ANA: *Villacorta & Hernández 989* (B, MO, US).—SONSONATE: *Pittier 1967* (US).

**Ruellia metallica** Leonard

AHUACHAPÁN: *Sandoval & Román 1496* (CAS, US), "gualchoca"; *Sermeño 93* (B, MO), "hierba de talepate"; *Standley 19772* (NY, US), *20171* (US), *20276* (NY, US).—SONSONATE: *Tucker 1335* (F, MICH, UC, US).

Some of the specimens cited above do not show well the linear to lanceolate terminal bracts usually attributed to the species. *Tucker 1335* at MICH has ovate to lanceolate to elliptic bracts, however, that are similar to bracts seen in other specimens of this species, and *Standley 19772* shows the typical terminal bracts.

**Ruellia paniculata** L.

LA UNIÓN: *Carlson 666* (EAP, F, UC); *Davidse et al. 37349* (CAS, MO).—SANTA ANA: *Carlson 1008* (F).

This species has not been reported previously from El Salvador.

**Ruellia puberula** (Leonard) Tharp & F. A. Barkley

LA UNIÓN: *Calderón 2368* (F); *Williams & Molina R. 16728* (EAP, F).—SAN MIGUEL: *Standley 21051* (US).—SANTA ANA: *Calderón 2184* (US); *Linares 2640* (EAP, MO); *Standley & Padilla V. 3245* (F).

This taxon was first reported from El Salvador by Leonard (1927) as *R. nudiflora* var. *puberula* Leonard. As interpreted here, *R. puberula* shows morphological variation that has not been adequately studied. *Standley & Padilla V. 3245* at F differs from most of the other collections by having entirely eglandular calyces (cf. discussion of *R. puberula* in Daniel, 1995a). Calyces of the other specimens are glandular except for *Calderón 2368*, which has one plant with glandular calyces and another plant with eglandular calyces. *Calderón 2368* and *Williams & Molina R. 16728* differ from the other collections cited by their near or complete lack of glandular trichomes on the young stems. In this regard, these two specimens agree with the description of the species provided by Daniel (1995a) for Chiapan plants. Daniel (1995a) discussed some of the distinctions between this species and both *R. nudiflora* and *R. intermedia*. *Ruellia puberula* would appear to differ from the widespread *R. nudiflora* principally by its lack of a terminal glandular thyrse and its mostly eglandular capsules. Additional studies of species boundaries in this complex are desirable.

**Sanchezia parvibracteata** Sprague & Hutch.

AHUACHAPÁN: *Padilla V. 173* (US).—LA LIBERTAD: *Berendsohn 9* (MO); *Carlson 282* (EAP, F).—SAN SALVADOR: *Calderón 588* (NY, US); *Standley 19362* (NY, US); *Velasco 8985* (US; type of *S. sprucei* var. *salvadorensis* Donn. Sm.).

This tropical American native is cultivated in El Salvador.

**Stenandrium pedunculatum** (Donn. Sm.) Leonard

SANTA ANA: *Linares 589* (EAP); *Weberling & Schwanitz 2273* (M).

This species was reported from El Salvador by Daniel (1993), who also provided a key to the three species of *Stenandrium* occurring in Central America.

**Tetramerium nemorum** Brandegee

SANTA ANA: *Standley & Padilla V. 3220a* (EAP, F, US).

This species was figured and listed as occurring in El Salvador by Gibson (1974) under the name *Averia longipes* (Standl.) Leonard. See Daniel (1986) for a discussion of *Averia* Leonard.

**Tetramerium nervosum** Nees

AHUACHAPÁN: *Sandoval s.n. (MS-319)* (CAS), "hierba de pollo"; *Sandoval & Chinchilla 141* (CAS, MO), "crisalia"; *Sandoval & Román 1509* (CAS), "pollo de altura"; *Sandoval & Sandoval 260* (CAS), "hierba buenilla de montaña"; *Standley & Padilla V. 2422* (EAP), *2874* (EAP); *Villacorta & Sandoval 949* (B, MO, US).—LA LIBERTAD: *Molina R. et al. 16689* (EAP, F, NY, US); *Villacorta 222* (MO, US); *Williams & Molina R. 15039* (EAP).—LA UNIÓN: *Grant 723* (A, F, MICH); *Standley 20680* (US; type of *T. standleyi* Happ).—MORAZÁN: *Tucker 474* (US), *512* (F, K, LL, MICH, NY, PH, UC, US).—SAN MIGUEL: *Calderón 2113* (US), *2123* (GH, US); *Standley 21057* (US).—SANTA ANA: *Linares & Martínez 1242* (EAP), *3117* (EAP); *Standley 19705* (NY, US); *Standley & Padilla V. 3049* (EAP, F, US).—SAN VICENTE: *Standley 21171* (GH, US); *Standley & Padilla V. 3347* (EAP), *3418* (EAP), *3514* (EAP); *Williams 13586* (EAP).—SONSONATE: *Standley 21770* (GH, US).—USULUTÁN: *Calderón 2098* (NY; type of *T. calderonii* Happ).—Dept. unknown: *Calderón 1929* (US).

The morphological forms of this variable species were discussed by Daniel (1986).

**Tetramerium tenuissimum** Rose

AHUACHAPÁN: *Linares & Martínez 1981* (EAP), *3212* (EAP); *Standley 19736* (MO, US).—LA LIBERTAD: *Villacorta 222* (B, MO, US).

This species is here newly reported for El Salvador. *Standley 19736* was treated by Daniel (1986) as *T. nervosum*. Further study of this collection reveals it to have five calyx lobes, pubescent capsules, and small bracts with short-ciliate margins; thus, it is referable to *T. tenuissimum* rather than *T. nervosum*.

**Thunbergia alata** Bojer

LA LIBERTAD: *González 307* (EAP, B); *Montalvo 6282* (B); *Rohweder 3271* (MO).—SAN SALVADOR: *Calderón 1173* (US), *1335* (US), *1805* (US).

This African species is cultivated and has become naturalized in numerous parts of tropical America. It is known both as a cultivated plant and as an escape from cultivation in El Salvador.

**Thunbergia erecta** (Benth.) T. Anderson

LA LIBERTAD: *Carlson 315* (F).—SAN SALVADOR: *Calderón 1171* (NY, US), *1344* (NY, US); *Standley 19378* (US), "nazaret, cuerno."

This African species is cultivated in El Salvador.

**Thunbergia fragrans** Roxb.

SANTA ANA: *Standley & Padilla V. 3099* (EAP, F, US).

This Asian species is cultivated and sometimes becomes naturalized in the American tropics. The collection cited above was noted to be an escape from cultivation.

**Thunbergia grandiflora** Roxb.

AHUACHAPÁN: *Padilla V. 332* (US), "Emperatriz Eugenia," *474* (US), "Emperatriz Eugenia."—LA LIBERTAD: *Villacorta 135* (MO), "Emperatriz Eugenia."—SAN SALVADOR: *Leppik 10* (EAP).

This Asian native sometimes becomes naturalized in tropical regions. *Padilla V. 332* was specifically noted to have been cultivated. The author of the name for this species is sometimes given as "(Roxb. ex Rottler) Roxb." Wood (1994) argued that the earliest valid publication of a name for the species was by Roxburgh in 1820.

**Thunbergia laurifolia** Lindl.

AHUACHAPÁN: *Standley & Padilla V. 2732* (F).—SAN SALVADOR: *Calderón 1818* (US); *Standley 20596* (NY, US), "Santa Cecilia."

This Asian species is cultivated in El Salvador.

## EXCLUDED TAXA AND NAMES

The following names have been attributed to plants occurring in El Salvador by various authors. They are excluded from the list above with a rationale provided.

*Aphelandra deppeana* Schltdl. & Cham.—Synomym of *A. scabra* (Daniel 1991).

*Aphelandra padillana* Standl.—Synomym of *A. gigantiflora* (Daniel 1991).

*Aphelandra schiedeana* var. *gigantiflora* (Lindau) D. N. Gibson.—Synomym of *A. gigantiflora* (Daniel 1991).

*Averia longipes* (Standl.) Leonard.—Synomym of *Tetramerium nemorum* (Daniel 1986).

*Barleria micans* Nees.—Synomym of *B. oenotheroides* (Daniel 1995b).

*Blechum brownei* Juss.—Synomym of *B. pyramidatum* (Daniel 1995b).

*Bravaisia floribunda* DC.—Synomym of *B. integerrima* (Daniel 1988).

*Dianthera sulphurea* Donn. Sm.—Synomym of *Justicia sulphurea* (Gibson 1974).

*Dicliptera acuminata* Juss.—This species was listed by Calderón and Standley (1941). Plants here treated as *D. membranacea* were originally identified as *D. acuminata*. Plants conforming to *D. acuminata* have not been observed from El Salvador.

*Dicliptera assurgens* (L.) Juss.—Synomym of *D. sexangularis* (Daniel 1995a).

*Dyschoriste bilabiata* (Seem.) Kuntze.—This species was included from El Salvador by Calderón and Standley (1941). The specimen annotated with this name by Standley is treated above as *D. quadrangularis*. Daniel (1995a) treated *D. bilabiata* as a synonym of *D. hirsutissima*.

*Elytraria squamosa* (Jacq.) Lindau.—Synomym of *E. imbricata* (Daniel 1995a).

*Eranthemum nervosum* (Vahl) R. Br. ex Roem. & Schult.—Synomym of *E. pulchellum* Andr. (Fosberg et al. 1993).

*Henrya imbricans* Donn. Sm.—Synomym of *H. insularis* (Daniel 1990a).

*Henrya scorpioides* (L.) Nees.—Gibson (1974) included El Salvador within the range of the species sometimes given this name. Plants treated with this name are usually referable to *H. insularis*. The basionym of *H. scorpioides* pertains to a species of *Dicliptera* (Daniel 1990a).

*Jacobinia aurea* (Schltdl.) Hemsl.—Synomym of *Justicia aurea* (Daniel 1995a).

*Jacobinia macrantha* (Benth.) Benth. & Hook. f.—This name, listed by Guzmán (1950), is a synonym of *Justicia macrantha* Benth., which is presently known only from Chiapas, Guatemala, Costa Rica, and Panama (Daniel 1995a). *Justicia macrantha* might occur (or might have occurred at one time) in El Salvador, but I have seen no specimens of it from that country. Guzmán's sketchy description (which is suggestive of *J. colorifera*) and a specimen of *J. colorifera* at US annotated as *Jacobinia macrantha* both suggest inclusion of *J. macrantha* based on a misidentification. Interestingly, *J. macrantha* was listed along with *J. spicigera* and *J. colorifera* [as *J. tinctoria* (Oerst.) D. N. Gibson] by Williams (1981) as a source of a bluing agent used in the laundering of fabric in Central America.

*Jacobinia spicigera* (Schltdl.) L. H. Bailey.—Synomym of *Justicia spicigera* (Daniel 1995a); the name was apparently misapplied to *J. colorifera* by Calderón and Standley (1941).

*Justicia corynimorpha* D. N. Gibson.—Synomym of *J. carthagenensis* (Daniel 1995a).

*Justicia ecbolium* L.—This name, listed by Guzmán (1950), is a synonym of the Asian species *Ecbolium ligustrinum* (Vahl) Vollesen (Vollesen 1989). Based on the description, local name, and economic uses he provided, Guzmán (1950) was undoubtedly referring to either *Justicia spicigera* or *J. colorifera*.

*Justicia fulvicoma* Schltdl.—Berendsohn and Araniva (1989) listed this species as occurring in El Salvador and noted that it was not native there. Gibson (1974) treated *J. fulvicoma* in a broad sense (e.g., *J. brandegeana* was listed in synonymy). Daniel (1989) rejected Gibson's concept of the species and treated *J. fulvicoma* as restricted to northeastern Mexico. The species is sometimes grown for ornament and might be cultivated in El Salvador. The basis for inclusion of this name by Berendsohn and Araniva's (1989) was likely a cultivated plant of *J. brandegeana* (see above).

*Justicia peckii* (S. F. Blake) Standl.—Synomym of *J. breviflora* (Daniel 1995a).

*Justicia salvadorensis* Standl.—Synomym of *J. breviflora*, see above.

*Nelsonia brunelloides* (Lam.) Kuntze.—This name was used by Calderón and Standley (1941) and has been treated as a synonym of *N. canescens* (e.g., Hossain 1984). According to Bremekamp (1944) its basionym apparently applies to a species of *Hemigraphis*.

*Odontonema callistachyum* (Schltdl. & Cham.) Kuntze.—This species was listed as occurring in El Salvador by Gibson (1974) and Berendsohn and Araniva (1989) based on a very broad concept of the species. According to Daniel (1995c), it is not known from the country.

*Odontonema strictum* (Nees) Kuntze.—Synomym of *O. tubaeforme* (Daniel 1995c).

*Pseuderanthemum laxiflorum* (A. Gray) F. T. Hubb.—See above under *P.* sp.

*Pseuderanthemum malaccense* Lindau.—See above under *P.* sp.

*Pseuderanthemum praecox* (Benth.) Leonard.—See above under *P. fasciculatum*.

*Pseuderanthemum pulchellum* Merr.—See above under *P.* sp. Merrill's name, *P. pulchellum* (Hort.) Merrill, was a new combination based either on *Eranthemum pulchellum* Andr. or a later homonym of it that pertained to the same species.

*Ruellia albicaulis* Bertero.—Synomym of *R. inundata* (Daniel 1995a).

*Ruellia humifusa* (Oerst.) Hemsl.—This name, listed by Calderón and Standley (1941), is a later homonym of *R. humifusa* Pers. They likely applied it to one or more collections of *Ruellia* that are here treated as a different species.

*Ruellia nudiflora* (Engelm. & A. Gray) Urb.—This species was attributed to El Salvador by Daniel (1995a) and several specimens bear this name. These are here treated under *R. puberula*. *Ruellia nudiflora* might be expected to occur in the country.

*Ruellia parva* (Nees) Hemsl.—Gibson (1974) used this name for plants here referred to *R. megasphaera* (see Daniel 1990b).

*Ruellia stemonacanthoides* (Oerst.) Hemsl.—This species was included by Calderón and Standley (1941), Gibson (1974), and Daniel (1995a). It is to be expected in El Salvador, but all specimens identified with this name have been referred to other species here (e.g., *R. donnell-smithii*, *R. metallica*).

*Ruellia tuberosa* L.—This species was included by Calderón and Standley (1941) but no Salvadoran specimens of it have been seen. Their inclusion of it was likely based on *Calderón 2368* which bears this name, but is treated above as *R. puberula*.

*Sanchezia sprucei* var. *salvadorensis* Donn. Sm.—Synomym of *S. parvibracteata* (Daniel 1995a).

*Tetramerium hispidum* Nees.—Synomym of *T. nervosum* Nees (Daniel 1986).

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# APPENDIX

## Relative Dates of Collection of Native Salvadoran Acanthaceae

Species known only from collections made prior to 1960:

*Anisacanthus tetracaulis*, *Dicliptera membranacea*, *Dicliptera* sp., *Dyschoriste hirsutissima*, *Dyschoriste quadrangularis*, *Justicia breviflora*, *Justicia spicigera*, *Justicia sulphurea*, *Tetramerium nemorum*.

Species collected at least once since 1 January 1960:

*Aphelandra gigantiflora*, *Aphelandra heydeana*, *Aphelandra scabra*, *Aphelandra schiedeana*, *Barleria oenotheroides*, *Blechum pyramidatum*, *Bravaisia integerrima*, *Carlowrightia hintonii*, *Chileranthemum pyramidatum*, *Dicliptera sexangularis*, *Dicliptera unguiculata*, *Elytraria imbricata*, *Henrya insularis*, *Justicia aurea*, *Justicia carthagenensis*, *Justicia colorifera*, *Justicia comata*, *Justicia ramosa*, *Justicia soliana*, *Lophostachys guatemalensis*, *Nelsonia canescens*, *Odontonema tubaeforme*, *Pseuderanthemum fasciculatum*, *Ruellia donnell-smithii*, *Ruellia geminiflora*, *Ruellia hookeriana*, *Ruellia inundata*, *Ruellia megasphaera*, *Ruellia metallica*, *Ruellia paniculata*, *Ruellia puberula*, *Stenandrium pedunculatum*, *Tetramerium nervosum*, *Tetramerium tenuissimum*.